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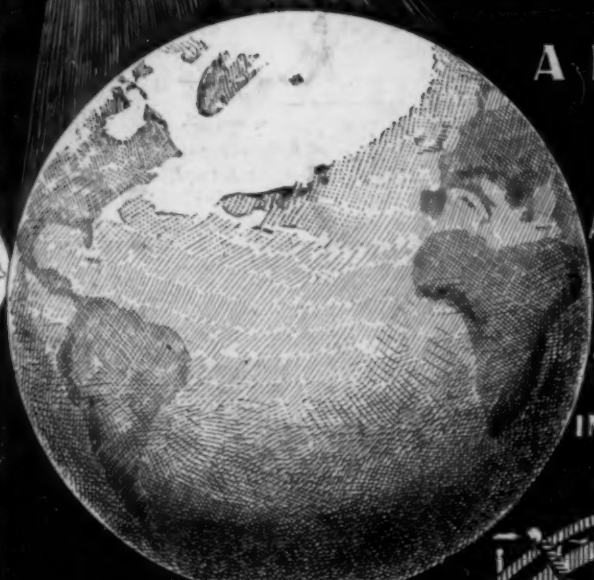
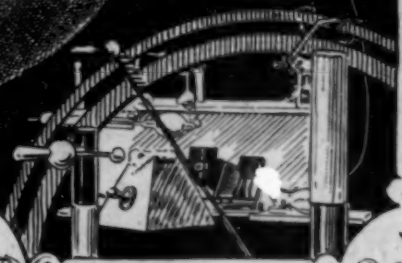
VOL. I. No. 4. OCTOBER, 1897.

THE AMERICAN X-RAY JOURNAL



A MONTHLY DEVOTED TO THE PRACTICAL APPLICATION OF THE NEW SCIENCE AND TO THE PHYSICAL IMPROVEMENT OF MAN.



HEBER ROBARTS, M.D., EDITOR.
2914 MORGAN ST.
ST. LOUIS, MO.

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THE AMERICAN X-RAY JOURNAL.

A Monthly Journal devoted to Practical X-Ray Work and Allied Arts and Sciences.

VOL. 1. ST. LOUIS, MO., OCTOBER, 1897. NO. 4.

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HEBER ROBARTS, M. D., EDITOR,
2914 MORGAN STREET, ST. LOUIS, MO.

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The use of the x-rays as a therapeutic agent has received a great deal of attention by the lay press, and, incidentally, by the medical journals. Cases reported to have been cured by this agent include that class of ailments which, as a rule, are considered incurable. Consumption, cancer, heart disease, and some forms of blindness are mentioned. These cases have a sensational cast which bids for eager, suffering and emotional readers; the medical journals are waiting for more tangible facts with which to guide the ways of practice.

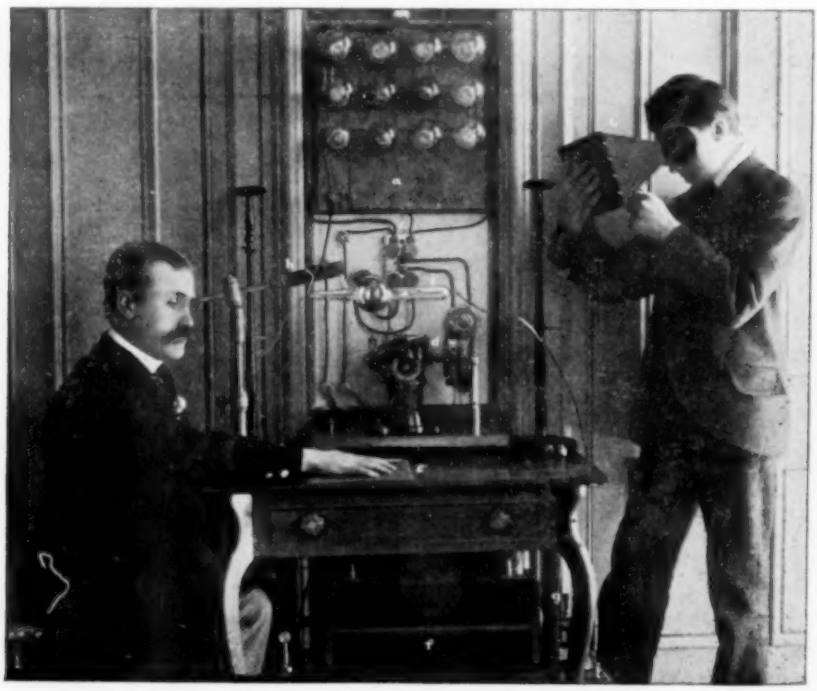
There can be no question about the ultra violet rays passing through the body, and that the effect of this agent creates a feeling of well-being not otherwise accounted for. This self-benignity has been observed by every x-ray operator. That the rays are bactericidal must yet be proven. It is thinkable, however, that the results obtained by radiant matter within the tissues of the body, may be due to a vital stimulus, as light to vegetation, capable of engendering greater power of cure already in operation in phagocytosis, and also the eliminative functions of glandular organs.

So effective have been the action of the rays upon some persons, that though not practitioners of medicine, they have observed the change. Prof. Nikola Tesla was troubled with a chronic cough, which he noticed rapidly disappeared and was cured while working with the x-ray. He gave mention of similar conditions in other persons.

Whether it is a cure effected with the x-rays, or merely a coincidence, the following case is instructive:

J. C. S., living at 3019 Laclede Ave., this city, became a patient in Aug., 1894. He was 58 years of age, unmarried, weighed 210 pounds, which was his usual weight. He stood erect, and his general appearance was healthy. He never had a venereal disease. He had never been sick except a few months the previous year, when he complained of pain similar to the present. At that time, too, he was sore in the right inguinal region. He now complained of severe pain in and about the shoulder, extending into the fingers. The arm was quite lame. He was habitually constipated, and recently suffered with a great deal of pyrosis. His life was active and he has always been a very large eater, and especially of meats. Soreness was acute in the lower left angle of the right hypocondriac, extending horizontally across the epigastric region. After six months treatment the patient lost 25 pounds and

the physical symptoms were aggravated. He sought relief from other physicians in vain. He visited watering-places without avail. In August, 1895, he weighed 120 pounds, was sallow, and looked greatly distressed. Physical examination revealed a hardened and rough induration, very painful and tender, movable within the abdomen, and extending from the xiphoid appendix to the lower border of the umbilical region in the median line. It was fully 7 inches in length and 3 inches across. The case was variously diagnosed, but the consensus of opinion pointed to a case of surgery. In August, 1896, the patient weighed 95 pounds, was excessively weak, constipated, and suffered with continuous pain in the umbilical region. Paroxysmal attacks came almost weekly, at which times his life seemed hopeless. At this time the patient was examined with the x-ray, and although the diagnosis was not made clear, it was sufficient to nullify the claim of cancer, or other fleshy growths. The condition was pronounced benign, surgery was denied, and the patient encouraged. Three applications of the x-ray with 30 minutes duration was given within a week. The patient, after the first day, noted some immunity from pain, but its full effect was not evident for a month. This improved condition lasted for some sixty days. He then lapsed into a more critical condition, and reduced to 80 pounds in weight. In March and April of this year he was again bathed with the rays a few times. The x-rays were powerful enough to cast a clear shadow of the bony structure in the fluoroscope, and the duration was 20 to 30 minutes. Sixty days after the treatment the only change noticed was less pain and better sleep. Since last June the patient has gradually regained strength and weight



X-Ray Apparatus in use in the private office of Dr. Carl Beck, New York City.

—now, October, he weighs 115 pounds; he is tolerably free from pain, and eats "everything;" nothing abnormal is felt in the abdomen. Every indication points to full recovery.

X-ray therapy commands the closest investigation. It is an agent that can be used with perfect impunity to the tissues—very unlike medicinal products. It offers greater hope than any medicinal agent gave in its early use.

Bullet *in situ* above elbow. First Roentgen picture of a medical case taken in New York City. Duration of exposure, one and one-half hours. [A better picture can now be taken in 10 seconds.—ED.]

THE ROENTGEN RAYS IN SURGERY.

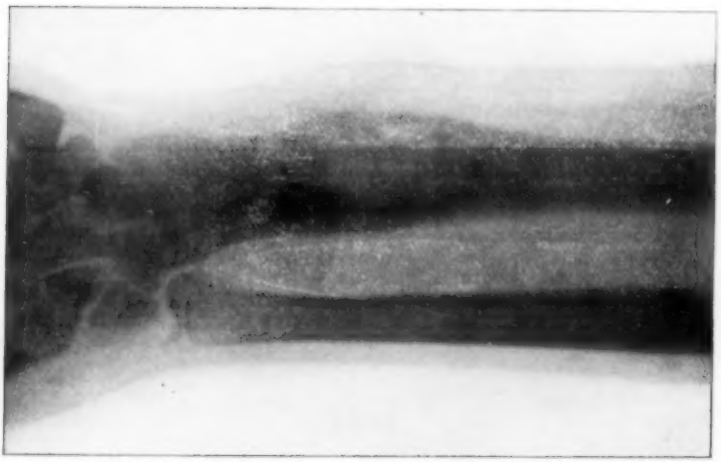
Read before the Surgical Section of the Second Pan-American Congress, City of Mexico, Nov. 9, 1896, by Carl Beck, M.D., Professor of Surgery, New York School of Clinical Medicine; Consulting Surgeon to St. Mark's Hospital, Polliklinik, West Side German Dispensary; Surgeon H. S. G. S. Orphan Asylum; Honorary President Section of General Surgery, Second Pan-American Congress, Etc.

At the instance of Professor Beck the cuts were kindly sent to THE AMERICAN X RAY JOURNAL, by Henry W. Cattell, A. M., M.D., of Philadelphia, Pa., Editor of the International Magazine, in which magazine the cuts and article in full appeared.

The article is most interesting and instructive, and should be read by every physician and others interested in this subject. For lack of space we can only reproduce the half tones.

FRACTURE OF THE FOURTH METACARPAL BONE.

COLLES' FRACTURE. Accident five weeks ago.



COLLES' FRACTURE AND FRACTURE OF THE STYLOID PROCESS OF THE ULNA.
An enormous amount of callus has been thrown out, preventing pronation and supination.

COLLES' FRACTURE. Accident three hours ago; slight infraction of the ulna.

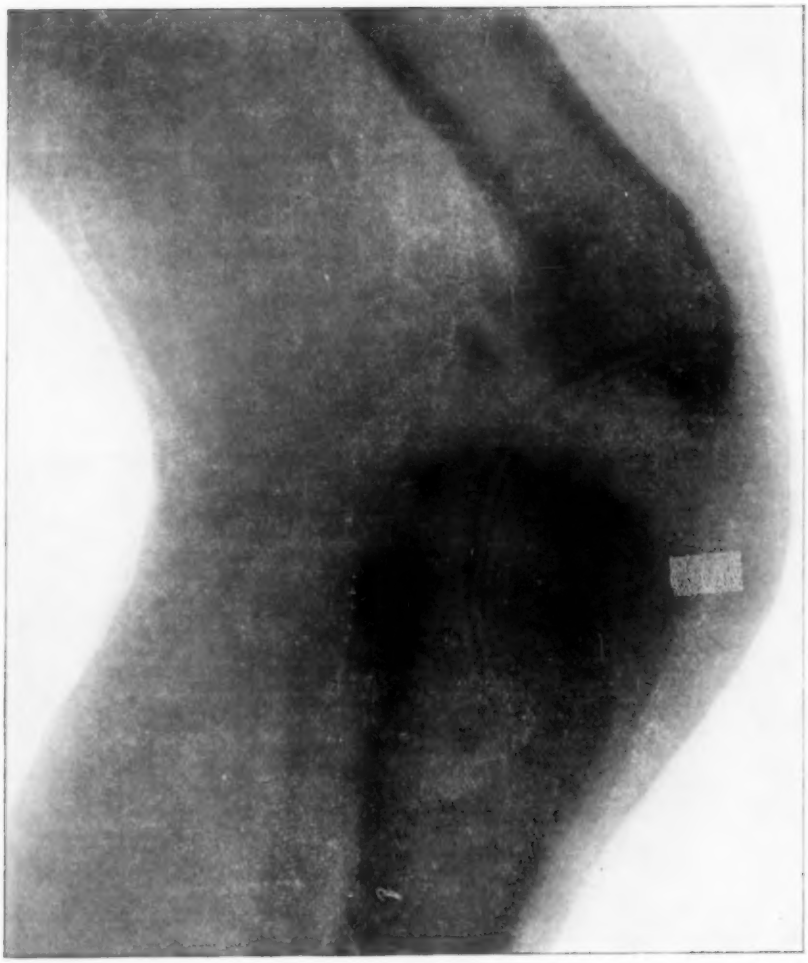
COLLES' FRACTURE. 24 days after the accident, the deformity being increased by extensive callus formation.

FRACTURE OF THE OLECRANON.

VICIOUS UNION OF FRACTURE OF FEMUR.
Nine weeks after the accident.

OSTEO-SARCOMA OF RIGHT RADIUS.

Partial resection of left ankle. Partial removal of right second, third, fourth and fifth metatarsi and of the os cuboideum.



Resection of knee-joint for tuberculosis.

THE X RAY PICTURE OF THE LIVING HUMAN HEAD.

By William James Morton, M. D., New York City.

[From *Items of Interest*, New York City.]

To those actually familiar, in practice, with the fluoroscopic and photographic revelations of the Roentgen ray, the exhibit is still a source of never failing wonder and admiration. But the public mind, fed by the sensationalism of the daily press, and satisfied to substitute its own imaginative processes of what might be, for what really is, expects of the x-ray, revelations of the human interior not yet nor probably ever attainable. We all recollect how during the period of the early announcement of Roentgen's discovery, statements were made and pictures exhibited purporting to show the structure of the brain, its veins and arteries, its convolutions, greater centers, etc.

These results I have never been able to repeat nor substantiate. And since negative evidence, on the basis of diagnosis by elimination, is often quite as valuable as affirmative, I reproduce in these pages an x-ray picture of the living human skull which, as I believe, represents the highest perfection of actual accomplishment yet recorded.

Compound fracture of the tibia, caused by the new army bullet. Shot from 50 yards at Governor's Island, New York.

This picture is chiefly remarkable, so far as it relates to the topographical and structural anatomy of the brain, for what it does not show. (Plate I.)

The subject was a boy of twelve and one-half years of age. I took the picture at the request of his parents, to see if any cause could be disclosed for

PLATE I.

frequent attacks of the epileptic *petit mal*. The usual focus tube was employed, and according to my usual custom was placed at a distance of two feet from the sensitive photographic plate. The duration of the exposure was fifteen minutes. An inspection of the print shows that the x-ray passed abundantly and freely through the head to the plate. The flesh and bones of the face indeed seem to have exerted scarcely an appreciable obstacle to its passage. In the present case a piece of depressed bone was suspected, but it is reasonably positive that no such depression exists. It is certain, however, that the convolutions of the brain, and their specific relation to their envelope of bone, have left behind them upon the plate a fairly definite record. This record I will not here attempt to interpret. Further similar pictures will be required to corroborate the localizations here evident. Fascinating as such a field of exploration may be to the neurologist, it is, however, as has been said, very different from the false x-ray pictures of the brain, heretofore represented, and I am not without hopes that the x-ray, still in its very infancy, may yet prove to be of inestimable value in brain as well as in other surgery.

If we turn from the skull contents to the facial region of the head, we find some points which may prove of real interest to dental surgery. These points are both affirmative and negative. Affirmatively, the existence and position of certain teeth not visible to the eye by ordinary inspection, are made clear, and their stage of development is disclosed. Negatively, we are assured (by comparison of this print with other prints of the normal skull) that no deviations, malformations or abnormal osseous growths, dental or otherwise exist.

Dr. Ottolengui, who was quick to appreciate the dental features of this x-ray picture, has kindly consented to make the interpretation, and to him I cheerfully leave this branch of the subject.

In conclusion I can hardly refrain from alluding to the great injustice which is now being done to legitimate x-ray work by those who cause severe burns and injuries to patients. This is wholly unnecessary and entirely due to lack of skill and knowledge. So great has been the impetus to investigate Roentgen's discovery that a mass of inefficient apparatus has been placed in inefficient hands. The burns, necrosis of the derma and depilation recorded are invariably due to long exposure, or nearness of the patient to the tube—because of a weak and inefficient x-ray. Never in my experience, and I have continuously taken x-ray pictures of every sort since the first announcement more than a year ago, have I seen the slightest injury to a tissue result. This I believe to be due to the fact that I have used a powerful x-ray and have thus been enabled to place my Crooke's tube at a considerable distance from the patient. My minimum distance for any work has been eighteen inches, my average distance, from two to three feet, and I have recently taken a picture of the entire adult figure, showing the skeleton bones, at a distance of four and one-half feet.

These remarks I make, not to take any credit to myself, but rather to aid others to seek the right path, and thus avoid casting an unnecessary and undeserved opprobrium upon this new and marvelous addition to our means of diagnosis.

Dr. Morton having very kindly presented this most interesting picture and article for publication, I am only too willing to interpret the dental aspect of the picture. Being desirous of presenting the whole skull, it was necessary to reduce the photograph in reproducing it, as the print was of life size. In order

Fig. 1.

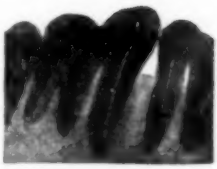


Fig. 2.

PLATE II

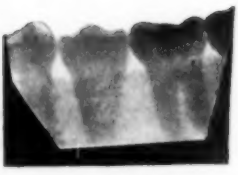
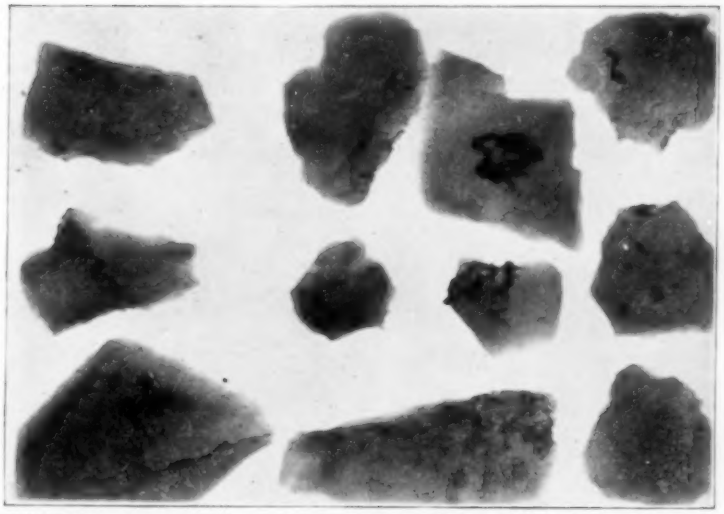


Fig. 3.

Fig. 4.

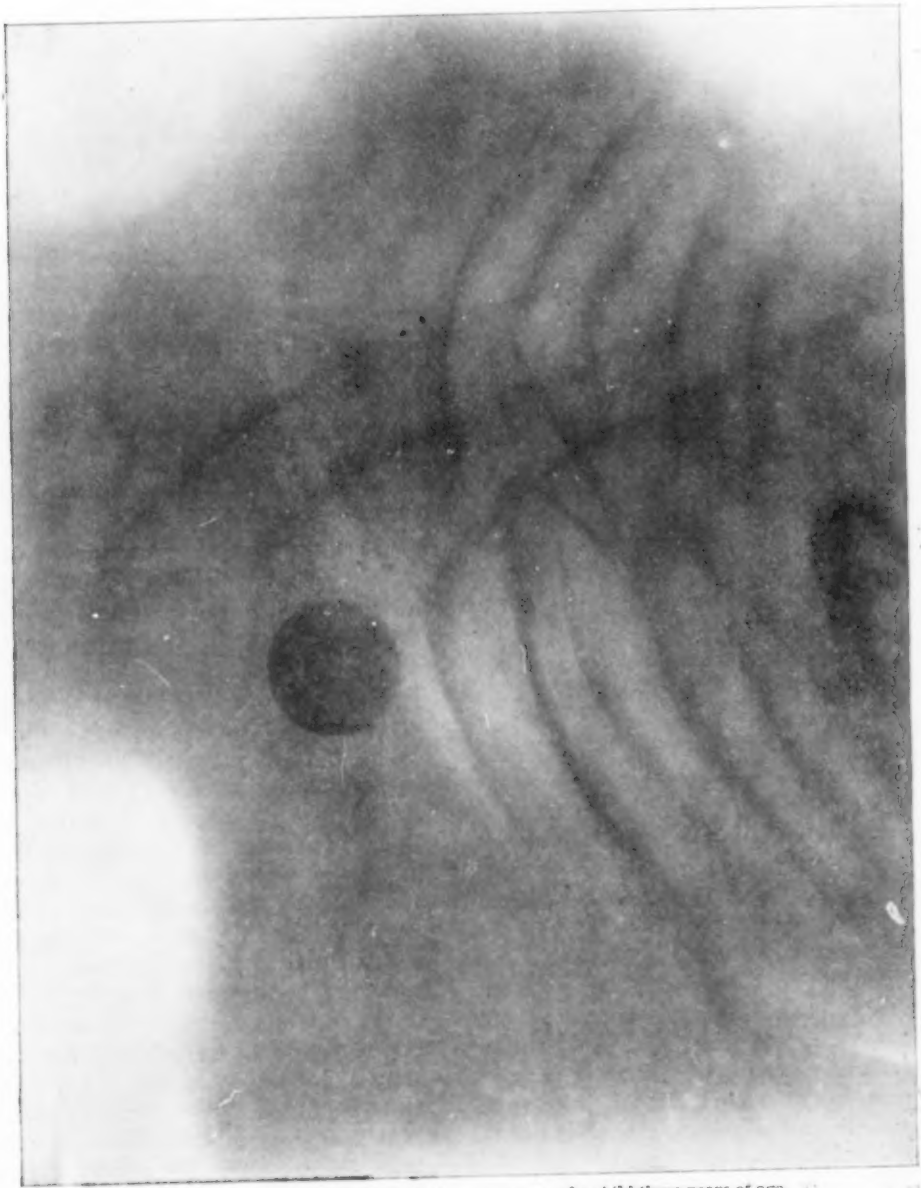


Solid quartz showing gold. Specimens from Randsburg, Cal., and Aurora, Lower California. Taken by x-rays July 20, 1887, by Dr. F. E. Yoakum, Los Angeles.

therefore to bring out more clearly the details of the mouth parts, a second picture has been made, showing that region in full size. (Plate II.)

The first features which will attract the attention of the dentist are the two triangular sharp pointed projections in the fore part of the jaws. At first one might imagine that we have here some one of the lower animals, heretofore unknown, armed with terribly powerful mandibles, which would place the creature half way between the elephant and man. But the subject was a very mild mannered human child, endowed with no oral armament beyond normal. The explanation of the triangular shadows is that the Crooke's tube being necessarily at the side of the head, we obtain a profile view. Consequently, remembering the curve of the jaws anteriorly, and the narrowing at that part, we find that the shadows of the teeth on both sides of the jaw, the hypotenuse of the triangle being made sharply distinct by the progressive absorption of the teeth posteriorly.

To be more explicit, the sharper part of the triangular shadow in the upper jaw includes the two central and the two lateral incisors, while the base of the shadow includes the cusp of the forming cuspid, plainly visible in the film, though not so distinct in the illusiration. In the lower jaw, the triangle is somewhat differently produced. We have a deeper shadow from the process because it is thrown by the bone of both sides, and the upper edge of the triangle is outlined because the thin roots of these young incisors, largely filled with pulp tissue, and not yet of full length, have not resisted the passage of the light, so that the crowns appear, with the roots almost unindicated. The cuspid is seen faintly rising from the shadow, but is not yet sufficiently calcified to cast a deep shadow. The bicuspids, however, which must appear at an earlier day are more developed, and are plainly outlined, the resorption of the roots of the temporary molars being beautifully shown, especially the posterior root of the second temporary molar, which, as usual, is more resistant. A point of great interest here is the distinct space shown between the erupting bicuspids and their predecessors, the temporary molars. This proves that the resorption of the roots of the



Radiograph of a Canadian penny in the œsophagus of a child three years of age. By Dr. Pitkin, Buffalo, N. Y.

temporary teeth is not due to an irritation caused by actual contact or abrasion, but rather that the resorption being a physiological expectation, a thick layer of odontoclasts are normally present and at work decalcifying the roots.

Another interesting feature of the picture is the condition of the twelfth year molars, still in the bone, but with scarcely any roots, the third molars casting no shadows at all, being at this age still a pulp mass.

The faint shadow below is the outline of the opposite inferior maxilla, which has been impressed upon the plate because the head was slightly tipped towards the x-ray which it must be remembered was on the side opposite to that which is distinctly shown—thus the jaw bone nearest the light is but slightly depicted. R. OTTOLENGUI.

[The radiographs were kindly loaned to the AMERICAN X-RAY JOURNAL by the editor of *Items of Interest*.]

Perhaps the strongest propensity manifested by a little child is to keep the alimentary canal replete with promiscuous material, digestible or otherwise, marbles, buttons, jackstones, pennies, nickels, etc., etc., are all consigned by the little one to the primæ vial. Pernicious and disastrous as the habit may prove to the juvenile's well-being it promises a fruitful field for research and profit to the expert Roentgenian.

On June 2d of the current year a three-year-old lad of Italian parentage was brought to The Buffalo Electrical Sanitarium with the following history:

One week prior to his admission to this institution a large Canadian penny had suddenly disappeared. Since that time he had complained of pain in the chest and was unable to deglutate solid aliment.

Fluoroscopic examination revealed the presence of the missing coin in the child's æsophagus two inches above the cardia (see accompanying skiagraph).

So securely was this semblance of her Royal Highness grasped by his gullet in the year of her jubilee that probes, bougies, brushes and forceps per ovum failed to effect its dislodgement.

An anterior meseal incision was therefore made in the cervical region at its junction with the body, the trachæ and great vessels were pressed to one side and an entrance to the chest effected beneath the sternum. The æsophagus was located between a sound passed through the mouth and the exploring index finger in the thorax. The tube was then raised and an incision made through which the penny was extracted.

During the operation no air was admitted to the pectus, hence touch was the only sense that could be utilized, the pulsating heart and great bloodvessels felt beneath the index finger served to warn me of their presence and told their exact location. The patient suffered but little from the loss of blood. Had it not been for the x-rays, with which we were able to determine the presence of the penny such an extreme procedure would hardly have been warranted. It is in this manner that we learn how much we owe to their discoverer, Professor Roentgen. Let us pay to him our everlasting tribute of respect. JOHN T. PITKIN, M.D.,

Buffalo, N. Y.

DIAGNOSIS WITH THE ROENTGEN RAY.

BY H. C. MCBRIAR, D. D. S., MIDDLETOWN, N. Y.

That the sciagraph, or photograph taken with the Roentgen ray is destined to be of service to the dentist as well as to the general surgeon, is amply proven by the following cases from my practice Both of these patients suffered with neuralgia, that ailment which converts so many into human shuttlecocks, to be referred from physician to dentist, and from dentist back to the doctor.

In the first case, the sciagraph gave a

negative result which, however, was of value because it was thus ascertained that the pains were not of dental origin. The teeth were all perfect and unquestionably in a healthy condition. But the origin of the pain seemed to indicate that there might be an impacted wisdom tooth. The sciagraph, however, dispelled this theory, no sign of a wisdom tooth being evident (Plate III. Fig. 1.)

In the second case the neuralgia was equally severe and mysterious. A sciagraph was made and disclosed the presence of pulp nodules, or secondary deutine formations, in the root of the lateral incisor, at the point marked in the picture (Plate III. Fig. 2), the upper half of the canal showing clear, and thus indicating the presence of live, soft tissue only. The canal of the cuspid is shown to be clear through, while a root filling in the molar shows a dark shadow. All of these details are much clearer in the films than in the photograph (or half tone reproduction) because in the former we have a chance to examine the picture with transmitted light.

The pulp of this tooth being removed the neuralgia disappeared. Without the sciagraph there would have been no more reason for opening the lateral incisor than for so treating either of the adjacent teeth.

THE ADVISABILITY OF X RAYS.

By S. H. Monell, M. D., Brooklyn, New York.
Chief Instructor of the Brooklyn Post-Graduate School of Clinical Electro-Therapeutics and Roentgen Photography; Fellow of New York Academy of Medicine, Kings County Medical Society, Etc.

Scattered through the East and West, all over these United States, are physicians who followed to its crest the first wave of popular x-ray enthusiasm, who spent time and money freely in breaking tubes and puzzling over apparatus they little understood, who recognize the value of Roentgen's discovery in many diagnostic examinations and still aspire to share its benefits, but who accept the verdict of certain medical journals that x-rays are not available for the general practitioner. While it may be more brilliant and startling to report in these pages some new discovery of the nature of luminiferous vibrations yet it seems to me that the greatest practical need now existing in regard to x-rays is to bring up the profession to the height of present development.

The value of high efficiency x-rays in surgical and even medical diagnosis cannot be disputed. If, however, none but a few specialists can procure reliable and adequate effects and x-rays are barred to the great mass of physicians the whole world must share in the disappointment, for millions of people live remote from these "few specialists." The belief that the average physician cannot employ an instrument which has revolutionized the examination of surgical affections in a single year is mischievous and prejudicial to medical progress. When a leading medical journal publishes the statement that, "the fact remains the same that x-ray photography, while frequently individually successful, has no success in the long run," we must stamp the statement with emphatic disapproval. On the contrary there is scarcely a practitioner who desires to produce the most brilliant and reliable x-ray effects, and who will devote a reasonable time to the technique who cannot soon equal the work of the leading specialists. This is as it should be, for no monopoly of so great a blessing as Roentgen's discovery is desirable. To make the fact known then, that a Crooke's tube will respond to the humblest as well as to the most "eminent" practitioner is one of the most important missions of The American X-Ray Journal at present.

What is required? Why, simply correct apparatus and the "know how" to use it.

Is the art of manipulating a superb Crooke's tube difficult aud does it take long experience? On the contrary it is simplicity itself and full instruction in the best technique involves but a couple of hours' time. This fact may be reassuring to the thousands who have "tried and failed" or who have as yet no measure of real x-ray capabilities beyond the dim glow of some inferior tube they have seen poorly operated, by a non-expert. Ninety-nine out of every hundred physicians would to-day be astonished could they enjoy an actual demonstration of the powers of a fine Crooke's tube glowing with splendid radiance. Yet equal results are possible in their own offices. In two of my articles (referring to the improved tube developed by me) I have described effects which I easily demonstrate to those who come to me for instruction. They are easily obtained and any one can do the same, yet from all quarters I receive letters saying, "The results that you obtain are really marvelous," and followed by many inquiries as to methods and apparatus. I do not wish my reports to be considered "marvelous" but I wish it to be made generally known that all I am able to do with a Crooke's tube can be done by any one who cares to learn how. It takes but a couple of hours to give in a practical object lesson the whole art of tube management in which success depends. There is no excuse for disappointment, or disaster, x-rays are available for the general profession. Their use need not be confined to a few. The cost of apparatus is now less than formerly, and the cost of complete instruction is nominal. With the author's form of tube breakage rarely occurs and the average physician can readily produce x-rays which will afford, for instance, the following effects:

Metallic objects through a piece of half-inch board are visible in a completely darkened room at forty or more feet from the tube, while at fifteen feet they show clear and sharp definition. With volumes of books aggregating 3,600 pages, plus heavy board covers piled in front of the tube the rays render the same objects clearly visible, while through a double foot plate of sheet copper the hand is visible from twelve to twenty inches from the tube. The mechanism of the hand, wrist, arm, ankle and all small and thin parts appears upon the fluoroscope three feet from the tube. Between the distance of thirty-six and twelve inches from the tube all gradations of transparency, such as the surgeon may require for these parts, are secured. When the object is nearer than twelve inches the bones become sufficiently transparent to allow the ready detection of a broken needle embedded in the radius or ulna, or bones of the hand, one of the most difficult of foreign bodies to locate with the fluoroscope. The shoulder and knee joints are also quite distinctly shadowed at three feet from the tube and the increase in transparency up to six inches is adequate for full surgical examination.

These effects are usually produced on the instant with no tedious delay whatever.

Those who have spent hours over a tube requiring even the hand to be held within a few inches of it may compare the above with their experience.

But it is perfectly easy to go much beyond this. The thick bones of the skull yield to the penetrating effectiveness of rays which are within reach of all physicians who desire to employ them. The head of a grown person viewed through the fluoroscope from side to side at all distances from three feet down to four inches between the bulb and the ear shows increasing transparency, until not only the lighter portions—frontal sinus, antrum, nose, etc., are illuminated, but any metallic object

placed opposite the thickest part is plainly seen wherever it is moved by the hand, showing that a bullet anywhere in the head could be quickly located with ease. At the maximum of radiance the transparency of the skull is about equal to the transparency of the hand with ordinary tubes and inferior apparatus.

The spinal column and the osseous detail of the trunk are visible in clear outline and may be studied in different degrees of transparency at various distances up to three feet. The detection of a bullet, fracture or dislocation is thus assured with the fluoroscope alone. While a photograph may, if desired, be secured in five minutes' exposure, instead of the half hour formerly required for the trunk of the body.

At between three and four feet from the tube the heart of an ordinary man is seen in nearly normal position and size. In a man of spare build the heart is as plainly seen, in as sharp detail and definition as is the hand held behind the fluoroscope. These practical test demonstrations prove an efficiency adequate for rapid surgical examinations in all parts of the body. My remarks here do not apply to occasional flashes of great radiance followed by days without again being able to produce a similar view but refer to effects which are reproduced at will at different times with different tubes and which may be equalled by all physicians who follow my teachings.

The ready recognition of functional derangements which may occur in any tube and the knowledge of how to correct them constitute the basis of satisfaction in x-ray work. It is a great economy of time as well as an unspeakable comfort to be able to step from guesswork to certainty in understanding the behavior of a Crooke's tube; to know at a glance or by a moment's test whether it is a good tube or a poor one; whether it can be coaxed into working form or is hopelessly impaired. The physician who has learned how to tell at once what is the matter with a refractory vacuum tube and how to correct the trouble has made a long step towards satisfactory x-ray work. It is the state of doubt as to the significance of phenomenon visible within a badly working tube which perplexes and distracts the uninstructed physician. Operative skill is not a vague, intangible chance "prize in a lottery," it is a definite, practical, easily acquired technique which almost any physician can obtain in a few hours. A judicious appreciation of this fact will put a different aspect upon the question of utilizing x-rays in the minds of the great majority of physicians.

ROENTGEN RAYS IN ANALYSES.

Dr. Ferdinand Ranwez gives the results of experiments with the x-rays to detect impurities in saffron. The plan adopted was to wrap a gelatinobromid plate in black paper, place the saffron on this on the same side as the sensitive film, and allow the rays to act for four minutes, afterwards developing and fixing in the usual manner. The presence of barium sulphate, potassium nitrate, and similar adulterants may be sharply indicated in the resulting radiograph. *Ann'ls de Phar.*

X-RAYS AND THE RETINA.

The Roentgen rays should be visible, Dr. Brades, of Halle, has assumed, to an eye from which the lens has been removed, as in the treatment of a cataract. He has succeed in finding a girl who can see the rays with her left eye, from which the lens have been taken, while her right eye, which is normal, sees nothing. He asserts that the rays affect the retina, and that the light can be seen by normal eyes if the head be enclosed in an opaque vessel near the source of the rays.—*Medical Times.*

WE WANT TO KNOW.

BY HOMER C. BENNETT, M.D., M.E.

If the Roentgen rays, that are way ahead,
Will show us in simple note,
How, when we ask our best girl to wed,
That lump will look in our throat.

If the cathode rays, that we hear all about,
When the burglar threatens to shoot,
Will they show us the picture without any doubt,
Of the heart that we feel in our boot.

If the new x-rays, that the papers do laud,
When the ghosts do walk at night,
Will show 'neath our hat to the world abroad
How our hair stands on end in our fright.

If the wonderful, new, electric rays,
Will do all the people have said,
And show us quite plainly, before many days,
Those wheels that we have in our head.

If the Roentgen, cathode, electric, x-light,
Invisible! Think of that!
Can ever be turned on the Congressman bright
And show him just where he is at.

Oh, if these rays should strike you and me,
Going through us without any pain,
Oh, what a fright they would give us to see
The mess which our stomachs contain!

Lima, Ohio.

LYNN, MASS., Sept. 3, 1897.

The X-Ray Journal No. 2914 Morgan St., St. Louis. Mo., Heber Robarts, M. D., Editor.

DEAR SIR: Dr. N. Stone Scott has undoubtedly done a great service in putting the results of his inquiries into the causes of x-ray injuries into such form as to be available to the general reader through the means of your valuable journal.

There are some remarks which he makes, however, which I must take exception to; for example, on page 58, he states that I advanced the theory that the burns are caused by ultra-violet light. I am not aware of ever having advanced any such theory, except in so as it has been my ideas that the x-rays themselves are extremely high-pitch rays, beyond the ultra-violet. On the contrary, from the first I discarded all theories as to the cause of x-ray burns for the one which was the most obvious to me, namely, that the injuries were caused by the rays themselves, or a certain set of rays, probably those of the lower wave lengths, emitted by the tube and known as x-rays, these lower wave lengths being included with the higher wave lengths.

I have seen no reason to change my original opinion that the injurious rays are the most easily absorbed of the Roentgen rays, or the lower wave lengths of the Roentgen order so to speak. My experiments, which Dr. Scott has alluded to, were made for the express purpose of showing that this was the correct view. The first experiment was made to find out, in the first place, if injury would follow what would be equivalent to a long exposure to the rays. It did follow. The extent of the injury and other circumstances showed to me that it was without question due to the radiation and not to electrostatic, ozonic, or other effects. My second experiment proved, conclusively, that the rays and the rays alone were the cause. It is not worth while to discuss whether they act through thermal effects, electrical effects, or electrochemical effects, or by purely mechanical effects, as nobody knows anything about that part of it. That injuries can be caused by electro-static streamers under the circumstances which produced injuries in my second experiment, namely, through aluminum foil, is impossible.

I have no doubt that the condition of the subject will have an influence on the extent and character of the injury, and I further have no doubt whatever that if a sufficiently long exposure be given and the tube be at the time evolving the apparently lower order of Roentgen rays in quantity, injury will follow, and that the injury will be due to the absorption of these lower pitch rays within the tissues. I feel sure, also, that we know

nothing whatever of the manner in which these rays produce the injury, or how they act, and it is idle to assume that they act in any particular way unless we get more information upon which we may base our assumptions. I am also convinced that no examination, either by the fluoroscope or by photographic plates, need ever be prolonged, or be made under such conditions, as will involve any considerable risk of x-ray injury. Yours truly,

ELIHU THOMSON.

INTERNAL RAYS.

Prof. S. P. Thompson, in a letter to L'Eclairage Electrique, explains the distinctive properties of a new kind of rays, which he has discovered inside the x-ray tube, and which he calls "internal rays." These rays which we have already shortly described in our report of the British Association meeting at Liverpool, says the English Electrical Review, differ from the Roentgen rays in being deflectable by a magnet, and from the cathode ray, in being given off in every direction from the surface of the anti-cathode. Prof. Thompson's attention was first drawn to these rays by observing that the boundary line of the fluorescence in the focus tube was displaced by a magnet, while no displacement of the corresponding line on a fluorescent screen held outside the tube was observed. Evidently, then, there were some deflectable rays flowing along withthe Roentgen rays inside the tube, but unable to pass with the latter through the glass. These rays do not appear to us to be so different in kind from the Roentgen rays as to require to be characterized by a special name. If Lenard's theory of the difference between the cathode and the Roentgen ray be correct, the two kinds of rays regarded from the point of view of magnetic deflectability pass into each other by insensible gradations. The Prof. Thompson says internal ray. not pass through the glass, they must be able to pass through the sides of an aluminum tube, in which case they would merely be a variety of our old friends, the Lenard rays. There appears to have been a great tendency lately among the X radiationists to mistake mere varieties for new species.

When you have a poorly nourished patient afflicted with a tape-worm, cause him to abstain from solid food for supper and eat no breakfast. At 10 o'clock in the morning give him a two-ounce emulsion holding four drams of Merck's essential oil of male fern and one-half dram of chloroform. In 50 minutes administer two ounces of castor oil containing one drop of croton oil. Now direct the patient to lay upon the table convenient for x-ray examination. With the fluoroscope the intestinal movements are recognizable and the study facilitated by aid of the instantaneous cut-off. Within 20 minutes following the second dose of medicine the worm will pass in one mass.

HAIRY NÆVUS TREATED BY THE X-RAYS

Leopold Freund (Wien. Med. Woch., March 6, 1897) reports the results he has obtained from the treatment of a pigmented and hairy nævus reaching from the nape of the neck down almost to the folds of the nates, and extending over the whole back, the sides of the thorax, the shoulders, and the upper half of the right arm. The back was exposed to the rays for two hours every morning at a distance of four inches from the tube, the cathode rays being employed. For ten days no effect was produced, but on the eleventh the hairs began to fall out in bundles, and this continued to an increasing extent for eight days, when a slight dermatitis ap-

ed, which soon yielded under the of ichthyol. By this time the neck and interscapular space had become quite bald. The actual cause of the falling out of the hairs appears to have been a slight inflammatory change, followed by atrophy of the follicles. No attempt at regeneration had taken place within six weeks.—*British Medical Journal, May 8, 1897.*

THE ROENTGEN RAY.

Dr. E. Bock suggests in Memorabilien for February that if letters are painted on a sheet of cardboard, afterward varnished and dusted with powdered metal, or if the leters are made as gold leaf is applied, the Roentgen rays will throw their shadow through the opaque cornea of the blind; and if the optic nerve is still sound, the blind person will see the shadowgraph thrown on the retina. He urges experts to experiment in this line with persons who have lost their sight from opacity of the cornea, etc., and quotes Professor Eder, of Vienna, as authority for its feasibility.

THE TRUE PLACE OF THE X-RAYS IN THE DIAGNOSIS OF ABNORMAL CONDITIONS.

Dr. Nicholas Senn, in his presidential address before the American Medical Association, said: "Translumination of the body by the wonderful Roentgen ray is the last and most important addition to our diagnostic resources in medicine and surgery." These words from so eminent and honest authority as Senn, can not otherwise than meet with the serious consideration of every thoughtful worker in the domain of science. And while the advantages in diagnosis by means of this agent are marvelous indeed, we must study to ascertain the true scope of its utility and the evils that sometimes arise from its employment. Indeed, we have no agent, however good, that is of universal utility, and we have no instrument, however important, that can not have its true function so perverted as to accomplish harm. The scalpel, which has brought relief to so many thousands of suffering human beings, has sometimes wondered into regions that would have been better off without it. Anæsthetics, that have taken away the pain of surgery, have gathered at least a few prematurely to their reward in the great unknown. In fact, those remedies which have served us best have sometimes made us sorrow most. And the way in which we can know the true value of the Rœntgen ray is by a study of the reports of all observers. And I must confess that in ophthalmic and laryngological practice, so far as my experience has extended, the value of the x-ray is confined to the locating of certain foreign bodies and the determination of certain pathological states of the bone. As to the evil results I have had no experience whatever, and out of a few hundred cases that I have examined with this agent I have failed to discover any unpleasant effects. But other observers have reported some very interesting morbid changes that have been produced by the influence of this weird and mysterious force.

THE BLIND AND SENSITIVE ELEMENTS.

A story hails from Russia about a new instrument for making the blind to see, said to be the invention of Dr. Noishewski. The principle of the instrument is the sensitiveness to light of selenium and tellurium, both of which change their quality as conductors of electricity with a variation in the light to which they are exposed. In stating that the blind can "see'. by this instrument, a relative meaning, only, is indicated. While their actual vision will be unaffected, they will feel the various effects

of changing light by its action. It is claimed that Dr. Noishewski has enabled a totally blind man to find the windows in a room, and after a little practice, to distinguish approaching men from approaching animals. It is further stated that the inventor is at work upon improvements to his device, which he hopes to make so efficient that the blind will be able to tell almost to a certainty when they are approaching opaque or transparent objects.

X-RAYS AND CANCELLATED DISEASE.

French surgeons have succeeded, with the aid of x-rays, in producing photographs of the bones of a living person which reveal the existence of disease in the center of the bones, while the outer portions are sound.—*Ex.*

Physicians dispensing their own medicines, or by prescription, depend upon the drug stores, can rely with certainty upon the high value of the pharmaceutical products of the *St. Louis Physicians' Supply Co.* Any and everything needed by a doctor can be supplied by them. It is the only complete physicians' armarnentarium in the West. The gentlemen connected with this firm are physicians and druggists. They are capable, obliging and reliable. Physicians doing business with them will have no reason for regret, but like a kind home, will continue to do business at the old stand.

Every railroad corporation should be in possession of an x-ray apparatus. X-ray machines are exceedingly simple. They reveal every portion of the interior of the body; they can be worked by any railway surgeon; they furnish the most important diagnostic means of the nineteenth century.

Fluoroscopy, and, if possible, radiography should be made of every injury received upon the road. Immediately after the dressing of the injured person a picture should be taken, and again when the patient is discharged. These are unerring records for the benefit of all parties concerned, and of vital worth in case of litigation.

The name or actual existence of a medical staff of railroad surgeons will be insufficient evidence, even when arrayed, to shield a corporation against the conquering evidence of an x-ray picture. Radiographs will be had by the prosecution when it is too late for the defence to correct their mistake. The trend of legal thought is to individualize culpability in these cases, and managers must awaken to the responsibility. The time has arrived when courts of equity, or courts passing upon unwritten law, will instruct severely against corporations or managers failing to provide reasonably for their injured—the possession of an x-ray apparatus.

CAUTION.

With the advancement in science, construction rapidly progresses. At the present time, and in the field of x-ray apparatus and appliances, the physician is confronted with a knowledge, accumulation of data and facts that is likely to set his brain whirling in order to clearly make a selection of goods suited to his use. He is likely to correspond with various manufacturers of such wares, receiving from each descriptive matter illustrating their particular form of construction and the merits of their goods. While he may be peacefully contemplating a selection, believing so far as his knowledge of the science will permit, that he is making a wise choice and securing goods exactly suited to his purpose, his attention is called to circular matter received through the mail upon the very goods he is contemplating a purchase. Carefully opening the circulars, his eye is attracted to the prices.

He looks with amazement to the cost of the goods as revealed by the circulars, and the prices quoted from some reputable house. Instantly he resolves to delay the purchase, and make further inquiry. He corresponds with his new formed acquaintance as to the grade of wares, and in due time receives an answer that they are all that could be wished for—the apparatus the best manufactured, the outfit the most perfect possible, and the definition far superior to an apparatus of eight or ten times the value. Like human nature, he glories in the fact that he can save unto himself an amount of no little value, and hastily proceeds to order the outfit from his new formed acquaintances.

In due time the goods will arrive. They are placed in shape, according to directions. The apparatus may have a capacity to glow a small tube; it may, also have the capacity to penetrate a small dense mass, so as to just glow the screen of the fluoroscope. This is what the maker calls a perfect outfit. To have the screen of the fluoroscope illuminated slightly by the x-ray is anything but satisfactory to the definition sought for in practical work. The physician at once is dissatisfied, denounces the maker of the outfit in measured terms, but to no purpose. The circular matter has been so carefully prepared as to leave beyond a question no part for redress. It is the same old story of the desire to save a little in the original cost, and the purchase of unsatisfactory apparatus. It can hardly be expected that a physician should be required to have complete technical knowledge of all the sciences, and therefore it would prove greatly to his advantage, greatly to his saving of money, and greatly to his success if he would clearly outline to any ordinary manufacturer what his wishes are as to the goods he desires to secure. He would then in turn receive the information and cost of an outfit suitable for his conditions. What would suit one operator would be wholly inadequate for another. Thus it would be useless to force one to the purchase of the exceedingly expensive outfit when the use would not demand. In the line of x-ray work, the definition of the outfit is one of great importance. To have a screen show the effect of the illumination, and to be unable to define the shape of the image or parts under examination, clearly reveals that the outfit is an impractical one, yet it produces x-rays beyond all questions of doubt. On the other hand, the ordinary practitioner when possessed of an outfit designed for ordinary surgical diagnosis would have within his range an outfit that would clearly define the extremities of the body, such as the arms, hands, and the lower extremities. The apparatus which would clearly define the parts, as enumerated, would by no means be of service in making definition through the chest and abdomen. An outfit that would produce good definition through the larger sections of the body cannot be secured for little money. The various parts must be made perfect and thoroughly tested. For surgical diagnosis, such as ordinary accidental cases of the extremities, dislocations of the extremities, a small outfit of much less cost would prove equally as satisfactory in the hands of the regular practitioner. It would give him the opportunity of making a record by photographs of the surgical work upon the case or the setting of the limb and filing same as against a suit in the future for malpractice. Strange as it may seem, circular matter has been distributed to the profession, and most boldly announcing complete x-ray outfits for the sum of $15.00! If we stop to consider a little, and sum up the various parts that are necessary to make an outfit simple and complete, we would have a value in a poor tube, a cheap tube holder and a cheap fluoroscope, exceeding in cost the

price asked for the complete outfit. Now what becomes of the cost of the more expensive part, which is the device for generating the high potential energy? The circulation of such literature is wholly misleading, and is simply done to catch the money of the profession, regardless of any merit that may be attached to the outfit. The class of wares that the profession desire have long passed the era of toys, and let us hope that the science may not retrograde to the age of mechanical toys. A science so noble and captivating, so instructive and revealing to the advanced mind, must progress upon the pure lines of science, and should demand the highest type of wares. To be exact and perfect in our doings we should have such instruments of application or measure as to carry us as far as possible beyond the range of error, and into the units of perfection. To be of service to mankind is to be of service to the world. Do not let us fall into the habit of securing that which is cheap, because cheap goods are purchased for exactly for what they are. They never prove satisfactory; they can never reap the benefits as would accrue from the use of higher class wares. With good instruments we accomplish much. With poor instruments we accomplish but little. The reputation of a practitioner may many times be at stake, simply through the use of inferior goods. Let us not encourage such. Let us, in making purchases, select goods of known value and honor, not at exhorbitant or fabulous prices, but at legitimate values. All reliable manufacturers are only too pleased to give their years of experience and knowledge in the line of their specialties for the benefit of the profession, as against the many misstatements of those constructing goods and making sales, seeking simply the money from the profession in exchange for wares that prove useless. Let us affix upon our minds the facts that we should first consider, not what the original cost may be, but what is the cost to maintain.

THOMAS F. LIVINGSTON,
Electrician, 820 Broadway,
New York, N. Y.

IMPROVEMENTS IN INDUCTION COILS.

The study of Roentgen-ray phenomena has caused a diligent study on the part of many experimenters for the improvement of the familiar Ruhmkorff induction coil. The suggestions made by Mr. George T. Hanchett in another column, seem so eminently and sensibly practical that it is to be hoped that the directions indicated by him will be closely followed by experimenters interested in this subject. The induction coil, as it has been constructed, is a highly inefficient piece of apparatus. While many improvements have been made upon it recently, there still remains much room for further progress.—*Electrical World.*

LIFE AT WASHINGTON.

The inauguration of a President, the selection of his Cabinet and the seating of a new Congress give especial timeliness to the remarkable series of articles on various phases of the government by Secretary Herbert, Postmaster-General Wilson, Attorney-General Harmon, Senator Lodge and Speaker Reed, to be printed in THE YOUTH'S COMPANION during 1897. This series of articles and the many other brilliant features promised for 1897, show that now, on the eve of its seventy-first birthday THE COMPANION is as wide-awake and as progressive as ever. THE COMPANION'S Art Calendar, lithographed in twelve colors, is given to each subscriber for the year '97. It is the most costly gift of its kind THE COMPANION has ever offered. An Illustrated Prospectus may be had free by addressing

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X-RAY NOTES.

AORTIC ECTASY. M. Beclere presented a radiographic photograph, which verified the existence of a double center of pulsations.

RESEARCHES WITH URANIUM RAYS. BECQUEREL. *Jour. Inst. Elec. Eng.*, June; abstracted briefly from the *Comptes Rendus*, March and April. Two papers, one on reseaches on uranium waves, and the other on the law of discharge of electrified uranium in air.

X-RAY BURNS. SHARPSTEEN. *Elec. Eng.*, July 8. A detailed description of two serious cases, from which he concludes that the harmful effect is due to the pulsating current; that if proper treatment had been pursued at once the skin would have become sound again; and that the health of a person has something to do with the effect produced.

X-RAYS IN 1708. COSMOS, June 12. Under this heading a translation is made of an article in the *Philosophical Transactions* of 1708, by Hawksbee, describing some experiments in which opaque objects were to a certain extent made transparent by means of what appears to have been a static charge effect; the matter seems to have no connection with x-rays.

APPLICATION OF ROENTGEN RAYS TO SURGERY. *Am. Jour. of Sc.*, July; abstracted briefly from the *Comptes Rendus*, May 17. Ollier describes his researches on the osseous regeneration after surgical operations; observations heretofore been very difficult, but x-rays now enable one to study the development exactly, rendering unnecessary, in certain cases, the amputation of diseased limbs, since the diseased portions can now be accurately located and removed.

PENETRATIVE POWER OF X-RAYS FOR THE ALKALINE METALS. MARANGONI. *Proc. Lond. Phys. Soc.*, June; abstracted briefly from the *Rend. Acc. Linc.*, 5, p. 403. He found that the thickness of sodium was double, and of lithium twenty times that of potassium to produce the same depth of shadow; lithium is, therefore, the most transparent of any of the metals; the alkali metals are, therefore, exceptions to the general rule that the transparency is inversely proportional to the density; it seems rather a function of the atomic weight.

NATURE OF ROENTGEN AND OTHER RAYS. PRECHT. Lond. *Elec.*, July 2; abstracted from the *Wied. Ann.* 61, p. 2. An elaborate paper on the comparison of Roentgen and other types of radiation. He described photographs showing that the bending of cathode rays in a magnetic field is strictly in accordance with the Biot-Savart law, and the theory of electrodynamic tension; the canal rays are not deflected by a magnet and have no power of exciting fluorescence or photographic action; Roentgen rays can alter the resistance of the selenium cell 32 per cent.; the amount of absorption by paper subjected to Roentgen rays depends upon the time during which the radiation lasts; he thinks a portion of the action is purely electrical; experiments were made with interference, and some data were obtained corresponding to a frequency of light, pointing to the fact that the radiations may be longitudinal rays.

LUMINESCENCE BY VARIOUS RAYS. ARNOLD. *Wied. Ann.*, 61, p. 313; abstracted in the Lond. *Elec.*, July 2. A systematic investigation of luminescence produced by all sorts and conditions of rays, including light, cathode, Roentgen, Becquerel, canal and discharge rays; a number of substances were also examined; among the results was a proof that the effects obtained with solid solutions cannot be obtained by a mere intimate mechanical mixture of the two

substances; there is a more decided difference in the luminescence of various bodies under the influence of cathode and x-rays respectively. Most brilliant solid solutions fail to produce Becquerel rays; the canal rays obtained by Goldstein from the red cathode rays by perforating the cathode, are not deflected by a magnet, but have the property of producing an intense luminescence which is only temporary, as the bodies rapidly lose this property under their influence; there is no photographic action; their energy is very great; it is thought that luminescence may offer a valuable test for distinguishing between the various types of rays.

X-RAYS AND BIRTH RATE.

The Vermont Medical Monthly says that over 500,000 French women have had their ovaries removed in the past fourteen years. It is small wonder, then, that the government officials of France have become seriously alarmed at the rapid decrease of the birth-rate in that country. It would be instructive to be told how many thousands of these women were spared with the sole object of preventing conception.—*American Journal of Surgery and Gynæcology.*

Statutory enactment requiring x-ray examinations by legalized experts of all ovaries, prior to operative interference, may save the French republic. It would prevent asexualization, an operation only resorted to by the authorities of Michigan to do away with the feeble-minded, epileptic, triple convicts and ravishers.

HUMAN LORGNETTE.

This is an apparatus, so styled by Gaston Seguy, of Paris, France, with which, it is claimed, the organs of the interior of the human body can be examined with minute detail. The Human Lorgnette is used by the Department of Customs of France to examine sealed packages. The contrivance is of small compass, not being larger than a parlor stereopticon, and contains all the essentials of the x-rays. Prof. Segue was the first man in France to take up the experiments of Roentgen, and has spent most of his time since in this line of research in the laboratory of Le Roux.

X-RAYS AND TRANSPLANTED BONE.

Northwestern Lancet (St. Paul) is authority for the statement that a case of bone grafting is reported from Buffalo, N. Y., in which a five-inch piece of bone from the femur of a sheep was transplanted into the tibia of a man suffering from comminuted fracture. The case is chiefly interesting because of the use of the x-rays during the process of repair, by which it was shown very early that union was taking place between the ends of the transplanted bone and the fragments of the tibia.

The x-rays were recently employed to locate a piece of steel in the eyeball, which was found in the vitreous above the ciliary body. Hirschberg magnet failed to dislodge the missile, necessitating an incision at the sclero-corneal junction.

RADIOGRAPHY APPLIED TO THE SURGERY OF THE NERVOUS SYSTEM.

M. M Chipault and Loude prosented radiographic proofs relative to the surgery of the cranium, brain, vertebræ, medulla and the peripherial nervous system, which show what valuable information can be furnished by the x-rays, provided always that the apparatus employed shall possess great power, and the period of application shall continue for twenty or thirty seconds.

Now-a-days a surgeon will rarely be satisfied that a bone is properly set, until verified by the x-rays.—*Dr. W. F. Estes in the International Journal of Surgery.*

As Editor of this journal I desire to express my grateful acknowledgement for the hundreds of encouraging letters received throughout the land. It will be my purpose to ever keep the columns up to the standard, and act as such that the announcement in the first number of the JOURNAL will not be infringed upon.

The success of the AMERICAN X-RAY JOURNAL is an assured fact. The business outlook is most promising. Between the last and present issue of the JOURNAL the advertisements have increased 14 new pages. Subscription has increased throughout the States at a gratifying rate, and in the last month letters containing subscription price for the JOURNAL have come from Germany. France, Cuba, South Africa, Chili, Mexico, Liberia and China.

Manufacturing phamacists and wholesale drug houses, makers of mechanical appliances, electrical apparatus, x-ray marhines and all those inventions calculated for the physical improvement of man, find the unique pages of this journal a profitable medium in which to present their wares.

It is with a great deal of pride we are able to give to the world this increased and greatly improved issue of the AMERICAN X-RAY JOURNAL. The expense is very great, but the lessons taught in its pages demand that no expense should be spared.

The day has passed when illustrated articles on the surgery of bones and joints will be appreciated without radiographs to prove the case.

There is not a surgeon living that could now successfully place a work on surgery upon the market without the salient features of the x-ray.

Pictures made by the Roentgen rays are variously called radiographs, shadowgraphs, x-ray photographs, cathode photographs, cathography, electro-photographs, skiagraphs, skotographs, ultra-actinographs, caloragraphs and Roentographs.

The phenomena of electricity and light depend upon the same principles. Both consist in vibrations of ether that fills the whole universe. Wilhelm Hertz, the renowned Professor of the University of Bonn, showed that electric induction obeys exactly the same laws as those governing the diffusion of the light waves.

X-Ray plants advertised in this journal are worthy of patronage, and can be relied upon in every way. Physicians and other prospective operators should be careful that the manufacturers of x-ray goods are reliable, and come well recommended. Cheap and inefficient apparatus, notwithstanding the boastful praise of some houses making them, bring failure and discredit upon the most useful boon to this century.

HEALTHY HUMOR.

They turned the x-rays on her
(It really was a shame),
And the lovely living picture
Was nothing but a frame.

—*Puck.*

Doctor—Now, what did your father and mother die of?

Applicant—Well, sir, I can't say as I do 'zactly remember, but 'twan't nothin' serious.—*Punch.*

Doctor (on second visit to see a boy who had swallowed a copper cent)—How is the boy this time?

Anxious Mother—No change yet.—*Life and Health.*

No surgeon or x-ray operator can be properly equipped for diagnostic work without the Dennis Fluorometer. Bullets and other foreign matter can be accurately located within any portion of the body by this device, and it is the only safe and reliable method known. Surgeons and hospitals purchasing useful x-ray machines, should not overlook this most essential diagnostic feature.

We are in receipt of an article from Doctor Francisco de P. Astudillo, Professor and Scientist of Habana, Cuba. The subject matter deals almost exclusively with specific pathology in a special line of cases in which the x-ray is the sole remedial agent. The results obtained are very wonderful, and calculated to awaken greater interest in x-ray work in its entirity.

Since the AMERICAN X-RAY JOURNAL has a large circulation in all Spanish America, we will reproduce the original in the November number of this journal, together with the transiation.

BOOK REVIEW.

MANUAL OF STATIC ELECTRICITY IN X-RAY AND THERAPEUTIC USES. By S. H. Monell, M. D., Founder and Chief Instructor of the Brooklyn Post-Graduate School of Clinical Electro-Therapeutics and Roentgen Photography; Fellow of the New York Academy of Medicine; Member of the New York County Medical Society; Kings County Medical Society; Editor of the Electro-Therapeutic Department Department of the *Medical Times and Register;* Author of the Treatment of Diseases by Electric Currents. A Hand Book of Plain Instruction for the General Practitioner, Etc. Second Edition. William Beverly Harrison, N. Y. 670 Pages. Octavo, Cloth, Gilt. Price, $6.00 Net.

This volume is just recently from the press. It is attractively printed in small pica on good heavy paper, is well bound and capable of withstanding severe use.

The general scope of the book is broad and comprehensive, new and original. The contents are arranged into parts and chapters, the latter into explanatory headlines, full and explicit. The index affords an easy guide to the book's contents.

The work is written in a most attractive style. It is scholarly, vigorous and confident. It picks up the reader, raw and untutored, and conveys to his understanding in convincing language the essentials of static electricity, divested of mask, myth and mystery. It is the only book written in any language exclusively upon the subject of static electricity, and the inventive genius of the author has slipped the cog of time, making the world his debtor.

Two essential features mark the volume: First, its historic interest for purposes of reference of the reports of Addison, Golding-Bird, Sir William Gull, and others, and the "collected opinions as to the value of static electricity in medicine." Secondly, the practical method of using static electricity in all morbid conditions, and also the superior attainment of x-radiance. The book contains about twenty illustrations.

Part I. is divided into 40 distinctive chapters, each under entitled captions, the subject matter of which contains all the knowledge known upon the subject, together with the more interesting personal experience of the author. Chapter III., details the "Care of the Holtz Machines." Chapter VI., "How to Regulate the Strength of a Static Machine." Chapter VII., "X-Ray Apparatus and Static Methods." Chapter XII., "Electro-Physiology." Chapter XIV., "Neuralgias and Neuritis." Chapter XVIII., "Chronic Functional Nervous Diseases." Chapter XX., "Pain." Chapter XXI., "Brain-Fag and Insomnia." Chapter XXIV., "Heart Diseases, Chronic Grief and Weather Neuroses." Chapter XXVIII., "Diseases of the Skin." Chapter XXXIV., "Impaired Voice of Surgeons, Debility of the Age." Chapter XL., "Static Electricity in Gynæcology."

Part II., contains 17 chapters. A few examples of the subjects are: Chapter I., "Historical Therapeutics." Chapter III., "Clinical Cases Treated by Static Electricity." Chapter XVII., "The Moral Effect of the Static Machine Considered as a Medical Apparatus.' On page 91 Monell says: "I am not wedded to any hobbies, and at all times approve of the best means which will produce the best results." Again, on page 4: "Electricity is not hostile to any other mode of cure. All that electricity and drugs, massage and heat, and cold and hydropathy, and climate, food, mental therapeutics and surgery combined, can do for suffering humanity, is yet utterly inadequate to supply the demand for relief from pain and disease. The united forces of medicine need more help not less. With this fact in view, the author commends the fuller study of static electricity." Again: "The physician instructed in its technique can operate it successfully every day in the year. It is no longer a creature of atmospheric variability." As an example of the

charms of style of the author, I quote from page 201, in Rheumatic Stiffness and Partial Paralysis: "Apply the spark slowly for several minutes with intervals of rest to avoid fatigue. The sense of lightness, buoyancy, endurance and general well being imparted to heavy, stiff and inactive limbs by this method is far more appreciable to the patient than the results of any other form of treatment known to medicine."

The book commends itself to every practitioner of medicine, and to every x-ray worker. No person can be informed without this book, for its contents can nowhere else be found.

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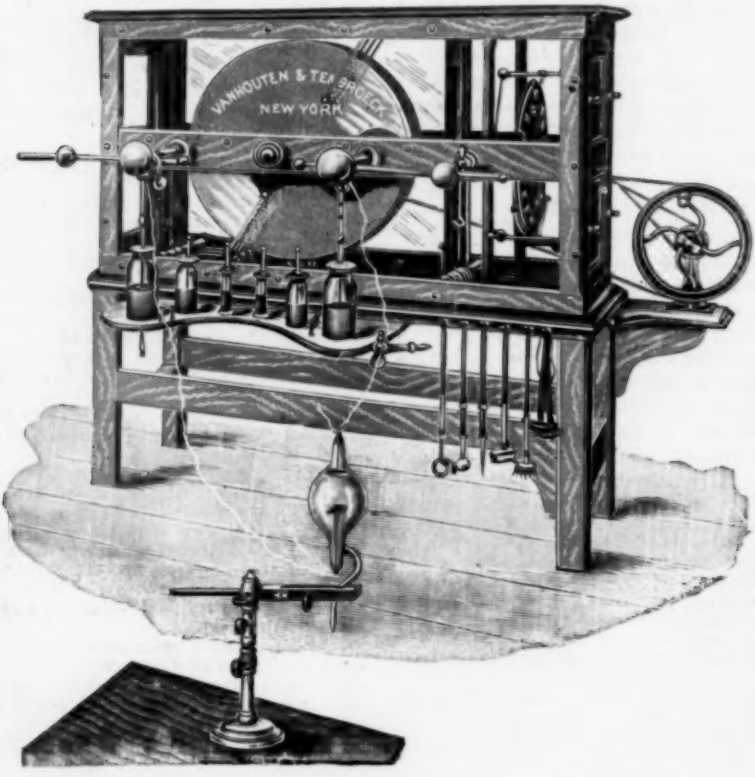

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